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54 Fluorine-containing water-repellent oil-repellent composition.

57 The present invention provides a fluorine-containing
water- and oil-repellent composition comprising a fluorine-
containing acrylate represented by the formula:



wherein X is a fluorine atom or -CFX¹X² group (wherein X¹
and X² are the same or different and are each a hydrogen
atom or fluorine atom), Y is alkylene having 1 to 3 carbon
atoms, -CH₂CH₂N(R)SO₂- group (wherein R is alkyl having 1
to 4 carbon atoms) or -CH₂CH(OZ)CH₂- (wherein Z is a hy-
drogen atom or acetyl), and Rf is fluoroalkyl having 3 to 21
carbon atoms, or fluoroalkyl having 3 to 21 carbon atoms
and 1 to 10 oxygen atoms in its carbon chain (wherein no
two oxygen atoms are present adjacent to each other).

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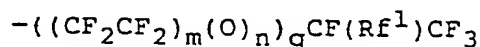
Claims:

1. A fluorine-containing water- and oil-repellent composition comprising a fluorine-containing polymer which comprises at least 10 mole % of a fluorine-containing acrylate represented by the formula:

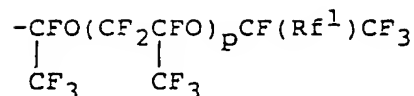


wherein X is a fluorine atom or $-\text{CFX}^1\text{X}^2$ group (wherein X^1 and X^2 are the same or different and are each a hydrogen atom or fluorine atom), Y is alkylene having 1 to 3 carbon atoms, $-\text{CH}_2\text{CH}_2\text{N}(\text{R})\text{SO}_2-$ group (wherein R is alkyl having 1 to 4 carbon atoms) or $-\text{CH}_2\text{CH}(\text{OZ})\text{CH}_2-$ (wherein Z is a hydrogen atom or acetyl), and Rf is fluoroalkyl having 3 to 21 carbon atoms, or fluoroalkyl having 3 to 21 carbon atoms and 1 to 10 oxygen atoms in its carbon chain (wherein no two oxygen atoms are present adjacent to each other).

2. A composition as defined in claim 1 wherein the group Rf group in the fluorine-containing acrylate represented by the formula (1) is a group represented by the formula:



wherein m is an integer of from 1 to 5, n is 0 or 1, q is an integer of from 1 to 5, and Rf^1 is a fluorine atom or trifluoromethyl, those represented by the formula



wherein p is an integer of from 0 to 5, and Rf^1 is as defined above, or those represented by the formula:



wherein Ph is phenylene, and Rf^2 is perfluoroalkyl having 5 to 15 carbon atoms.

3. A composition as defined in claim 1 which comprises:

- 10 (i) 10 to 90 mole % of the fluorine-containing acrylate represented by the formula (1), and
(ii) 90 to 10 mole % of an ethylenically unsaturated monomer.

4. A composition as defined in claim 3 wherein
15 the ethylenically unsaturated monomer is at least one of a monomer represented by the formula:



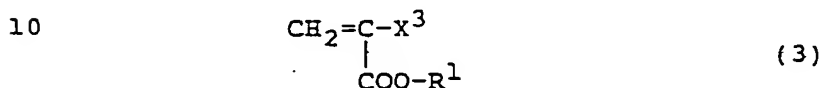
- 20 wherein A is a hydrogen atom, chlorine atom or methyl and B is alkyl having 1 to 20 carbon atoms, alicyclic group having 6 to 8 carbon atoms or fluoroalkyl having 1 to 10 carbon atoms; ethylene, propylene, styrene; and
(metha)acrylate having vinyl, hydroxyl, carboxyl,
25 glycidyl, dialkylamino or trialkoxysilyl.

5. A composition as defined in claim 1 which is in the form of a solution.

6. A composition as defined in claim 1 which is in the form of an aqueous dispersion.

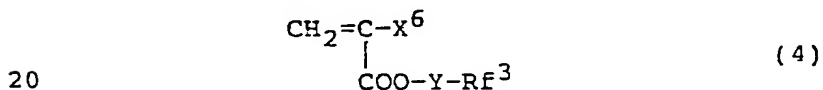
5 7. A fluorine-containing water- and oil-repellent composition comprising a fluorine-containing polymer which comprises

(i) 10 to 90 mole % of a monomer represented by the formula:



wherein X^3 is a fluorine atom, chlorine atom or $-\text{CFX}^4\text{X}^5$ group (wherein X^4 and X^5 are the same or different and are each a hydrogen atom or fluorine atom), and R^1 is
15 alkyl having 1 to 20 carbon atoms, alicyclic group, aromatic group or aralkyl;

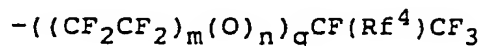
(ii) 10 to 80 mole % of a monomer represented by the formula:



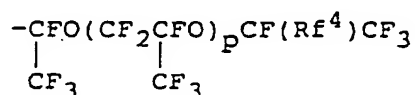
wherein X^6 is a hydrogen atom or methyl, Y is alkylene having 1 to 3 carbon atoms, $-\text{CH}_2\text{CH}_2\text{N}(\text{R})\text{SO}_2-$ group (wherein R is alkyl having 1 to 4 carbon atoms) or
25 $-\text{CH}_2\text{CH}(\text{OZ})\text{CH}_2-$ (wherein Z is a hydrogen atom or acetyl), and Rf^3 is fluoroalkyl having 3 to 21 carbon

atoms, or fluoroalkyl having 3 to 21 carbon atoms and 1 to 10 oxygen atoms in its carbon chain (wherein no two oxygen atoms are present adjacent to each other); and
 (iii) 0 to 50 mole % of other copolymerizable
 5 ethylenically unsaturated monomer,
 the combined amount of the monomers (i) to (iii) being 100 mole %.

8. A composition as defined in claim 7 wherein the group Rf^3 in the fluorine-containing acrylate
 10 represented by the formula (4) is a group represented by the formula:



wherein m is an integer of from 1 to 5, n is 0 or 1, q is an integer of from 1 to 5, and Rf^4 is a fluorine atom or
 15 trifluoromethyl, those represented by the formula



wherein p is an integer of from 0 to 5, and Rf^4 is as defined above, or those represented by the formula:



wherein Ph is phenylene, and Rf^5 is perfluoroalkyl having 5 to 15 carbon atoms.

9. A composition as defined in claim 7 which is in the form of a solution.

25 10. A composition as defined in claim 7 which is

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in the form of an aqueous dispersion.